

Influence of Lorentz Invariance Violation on ν -oscillation probabilities in LBL experiments

Neutrinos having non-zero mass provide compelling experimental evidence for physics beyond the Standard Model. Lorentz Invariance Violation (LIV) is a violation of space-time symmetry, implying that physical laws are no longer invariant under Lorentz transformations. The possibility of exploring LIV using neutrino oscillation probabilities is appealing. The LIV effect considered here is intrinsic in nature, and its effects will be present even in a vacuum. We use the Standard Model Extension (SME) framework to study LIV, which is treated as a perturbation to the standard Hamiltonian. And by using this Hamiltonian we study the effects of LIV on the neutrino oscillation probabilities in the presence of the LIV parameters.

In this work, we investigate how the presence of LIV terms impacts the neutrino oscillation probabilities and explore their impact in LBL experiments.

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